Space Weather Forecast

Issued on Friday, 02 June 2023 at 13:08 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares (R1-R2; Minor-Moderate radio blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the past 24 hours, with an impulsive Moderate class flare observed at 02/0241UTC from a new region near centre-disc in the northern hemisphere. Several Common class flares were also observed and most were attributed to an apparently magnetically complex region in the southeast. Two other regions in the southwestern quadrant are also magnetically complex. Most remaining regions out of the total of seven numbered sunspot groups are small and weak, fading or stable. No Earth-directed CMEs were observed on available imagery during the period.

Solar Wind / Geomagnetic Activity: Solar winds have declined from slightly elevated levels to Low levels. Total magnetic field strength was Weak, as was the important north-south component. Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low to Moderate with a 50% chance of Moderate class flares, and a slight 10% chance of a strong flare. Any significant flares are most likely to originate from the complex region in the southeast, and the newly numbered region near centre-disc. New or returning regions are anticipated to rotate onto the visible disc during the forecast period.

Solar Wind / Geomagnetic Activity: No Earth directed CMEs feature in the forecast. Solar winds may be enhanced by a connection to a high speed stream in the next 24 hours, potentially pushing solar winds to around 500 km/s. Solar winds then probably declining later on Day 3 (04 June). Geomagnetic activity is expected to be Quiet to Unsettled, with a chance of isolated Active intervals. By Day 4 (5th June) predominantly Quiet geomagnetic activity are expected.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels with solar radiation storms unlikely to occur. However, there is a slight 10% chance of reaching the Minor Storm threshold should any larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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